Trig Final (TEST v638)
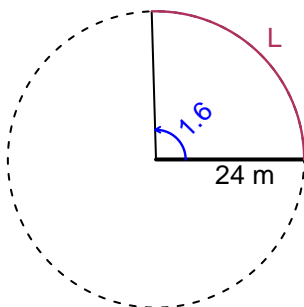
- You should have a calculator (like Desmos) and a unit-circle reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 1.6 radians. The radius is 24 meters. How long is the arc in meters?
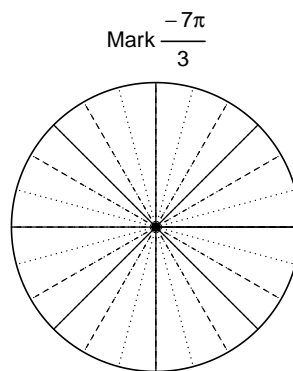

Question 2

Consider angles $\frac{9\pi}{4}$ and $\frac{-7\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{9\pi}{4}\right)$ and $\sin\left(\frac{-7\pi}{3}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{9\pi}{4}$

Find cos(9π/4)

Mark $\dfrac{-7\pi}{3}$
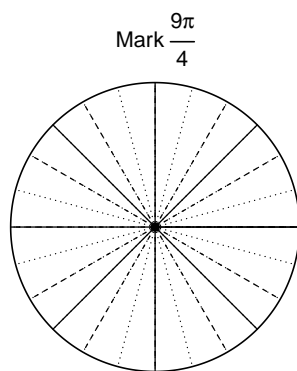
Find sin(−7π/3)

Question 3

If $\cos(\theta) = \frac{20}{29}$, and θ is in quadrant IV, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 8.32 meters, a midline at $y = -4.05$ meters, and a frequency of 2.37 Hz. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).